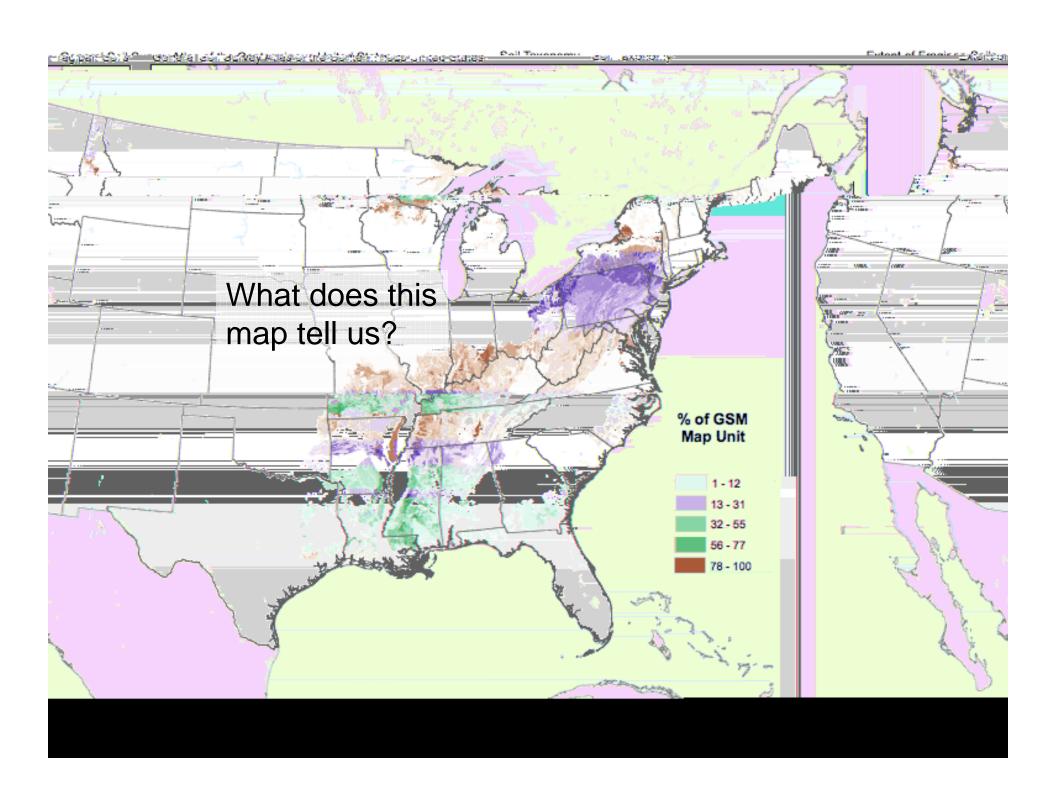
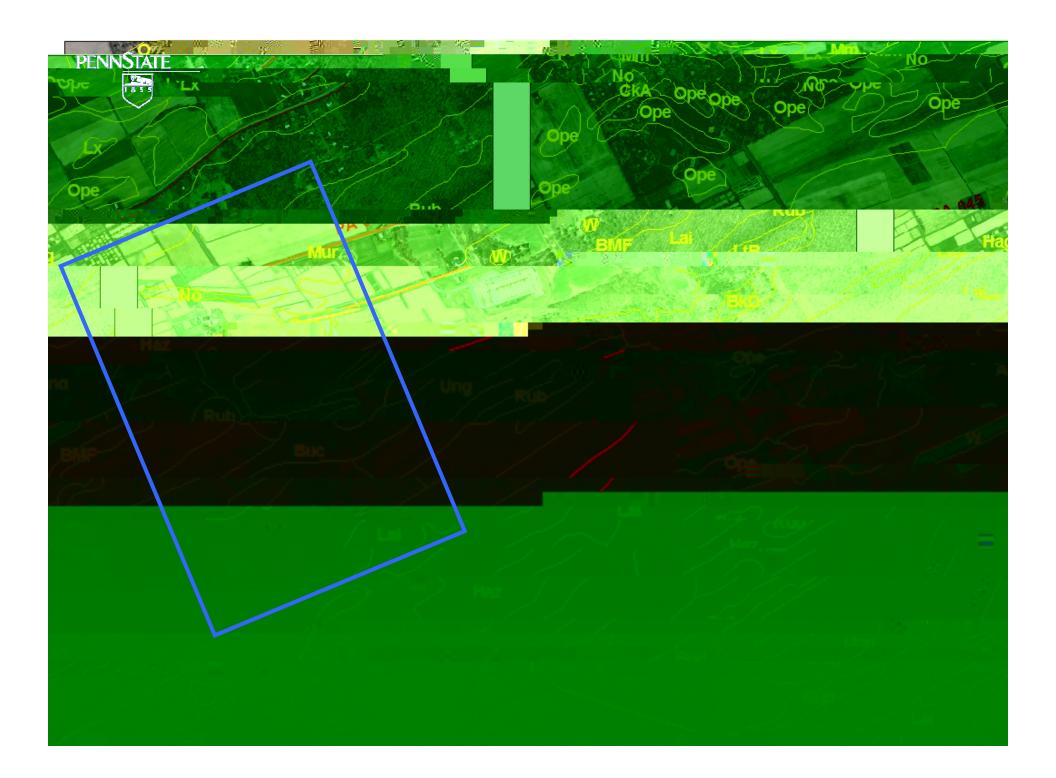
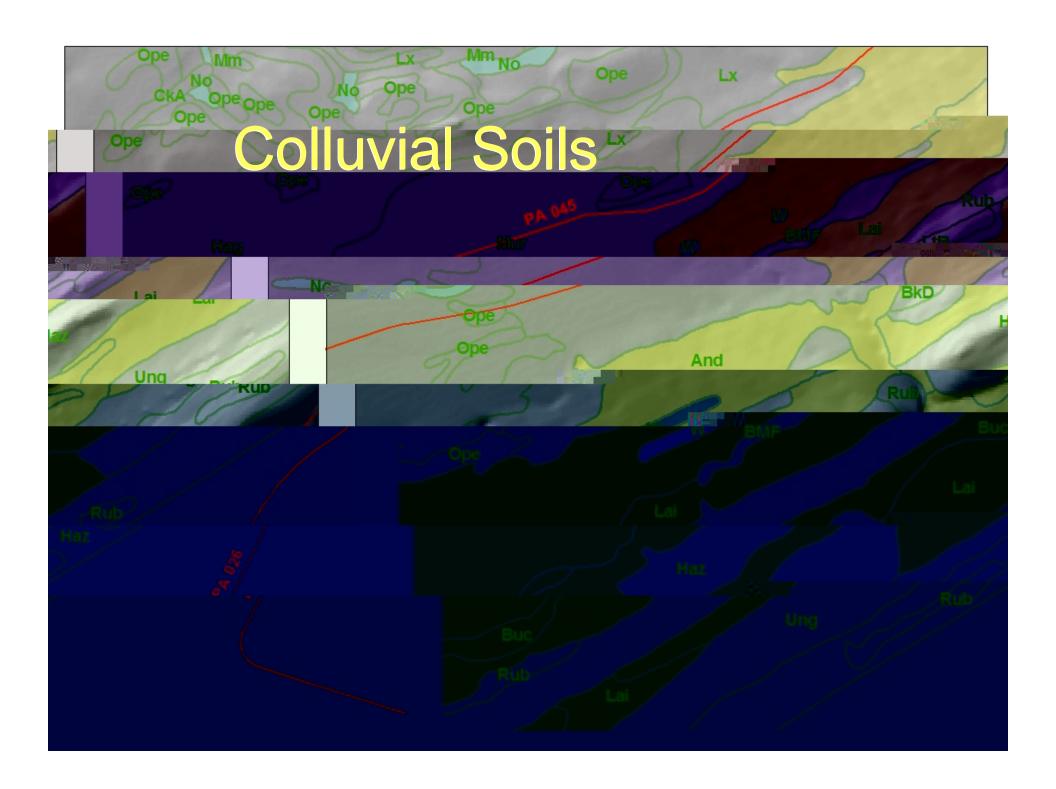
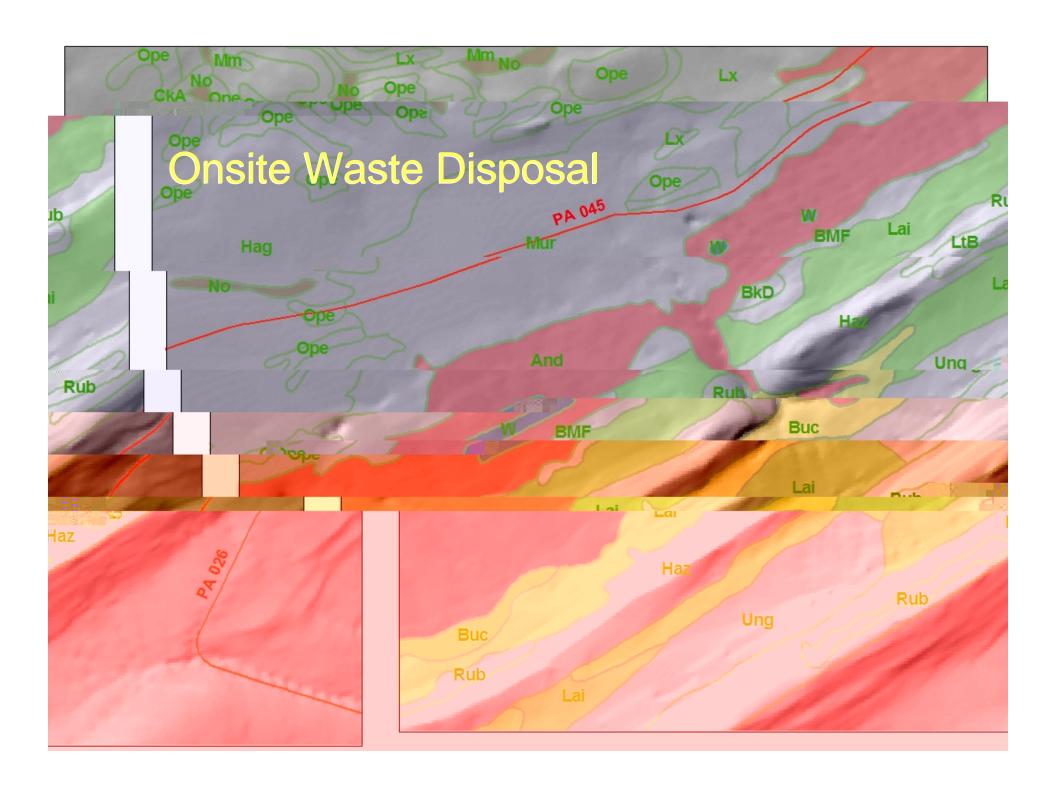
Drohan Fragipan Quest Penn State University

2008 NE Cooperative Soil Survey Meeting Rhode Island



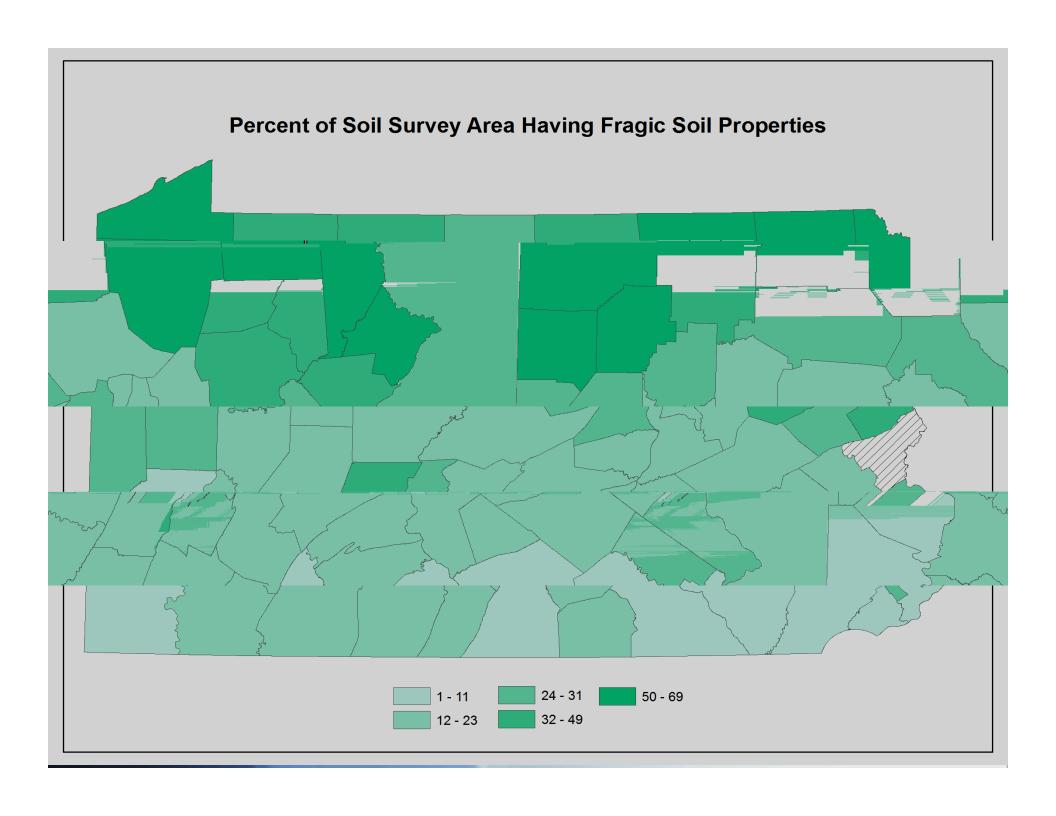


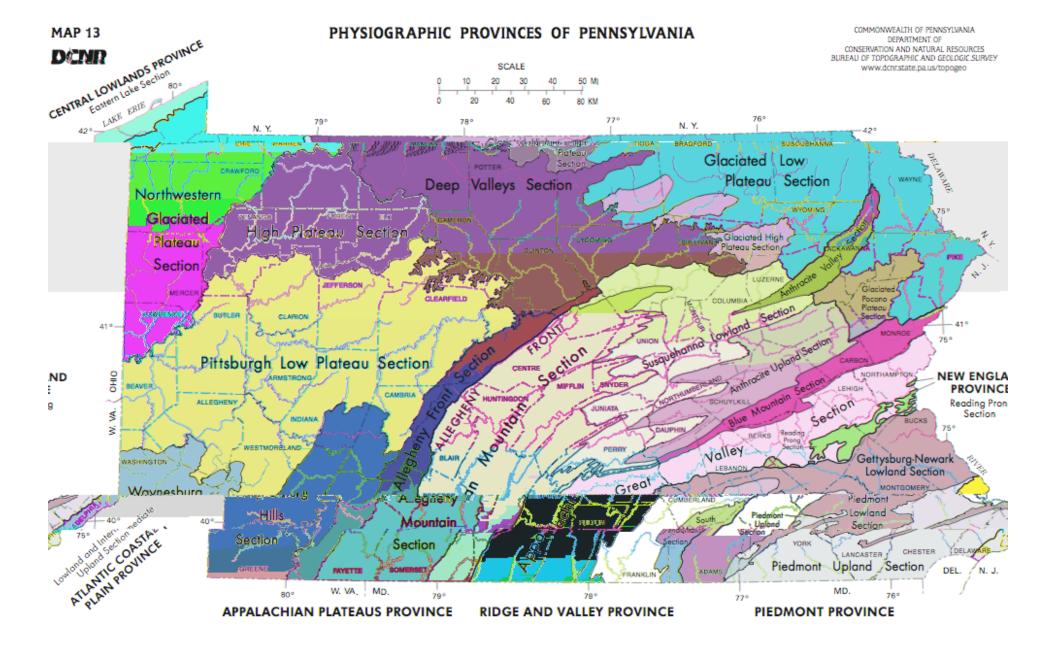




Study 1

- Hypothesis: Different parent materials result in different mechanisms of fragipan formation
- Revisit distribution of the fragi taxon across
 PA now that we have a complete SSURGO coverage.
- Geomorphic relationships
- Mapping issues



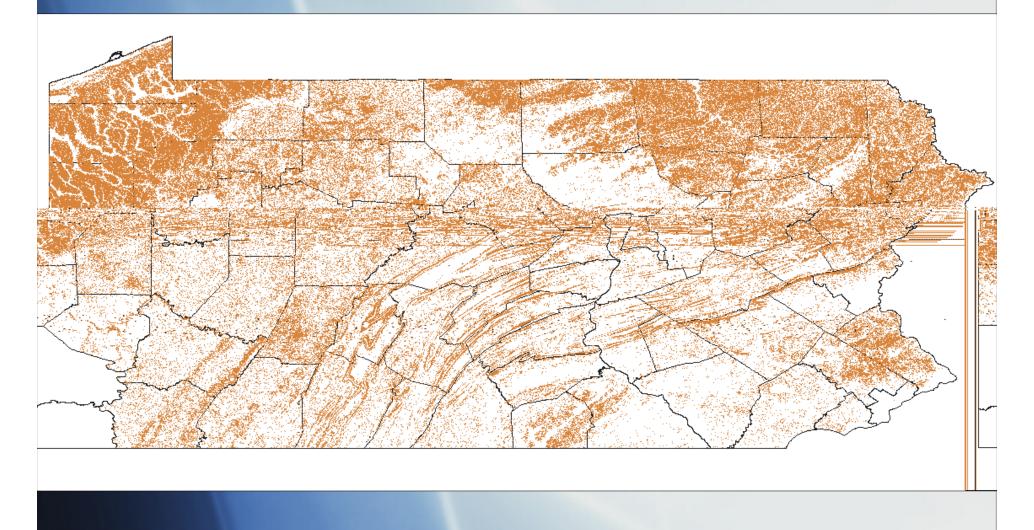


Rule Selection for SSURGO

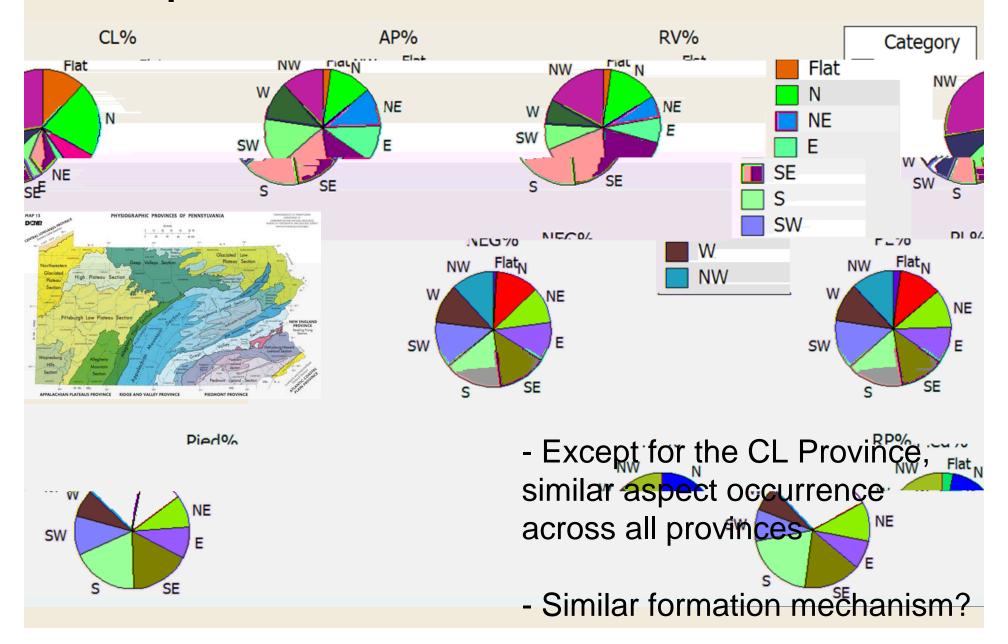
MU's eliminated that:

- were associations where one of the two series did not have a fragi taxon
- did not have a fragi taxon as indicated by the series OSD
- were described using older terminology like dystochrept, variant, etc. and/or that gave no indication of a fragi taxon
- were comprised of misc types like urban land, mine land (a lot of these in there)

Dominant MU's with fragi taxon

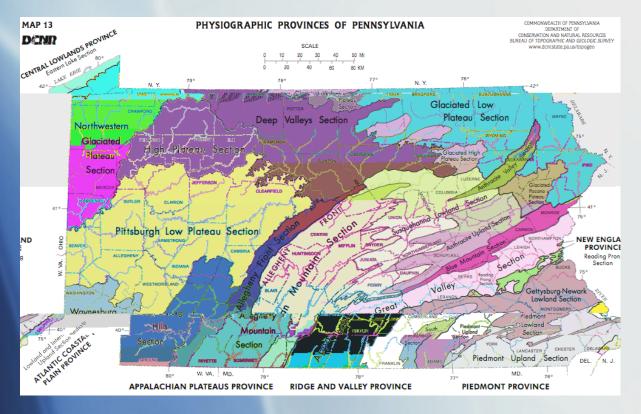


Aspect Trends by Physiograpic Province



% Slope Trends by Physiograpic Province

	AP	CL	RP	PIED	RV	NWglac	NEglac
0-3	51	83	41	85	41	75	42
4-8	36	16	47	14	38	21	47
9-15	12	<1	12	<2	<15	2	12
16-25	<3	<1	<1	<1	<2	<1	2
>25	<1	<1	0	<1	<1	<1	<1

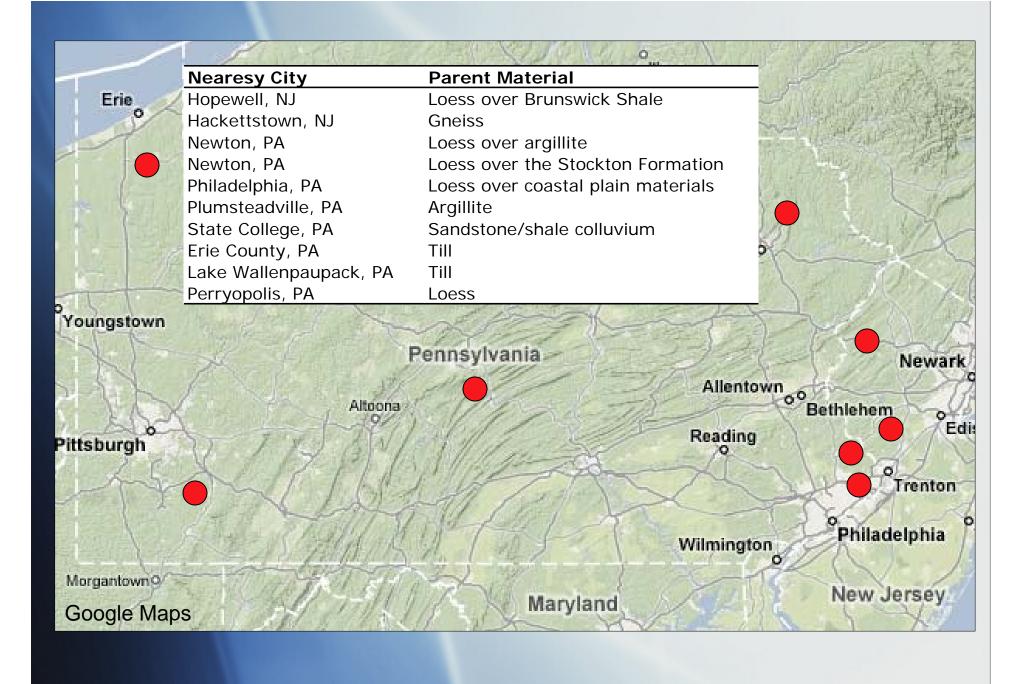


Study 2

 Hypothesis: Fe/Al oxides and/or amorphous Si cementation responsible for greater Bx strength

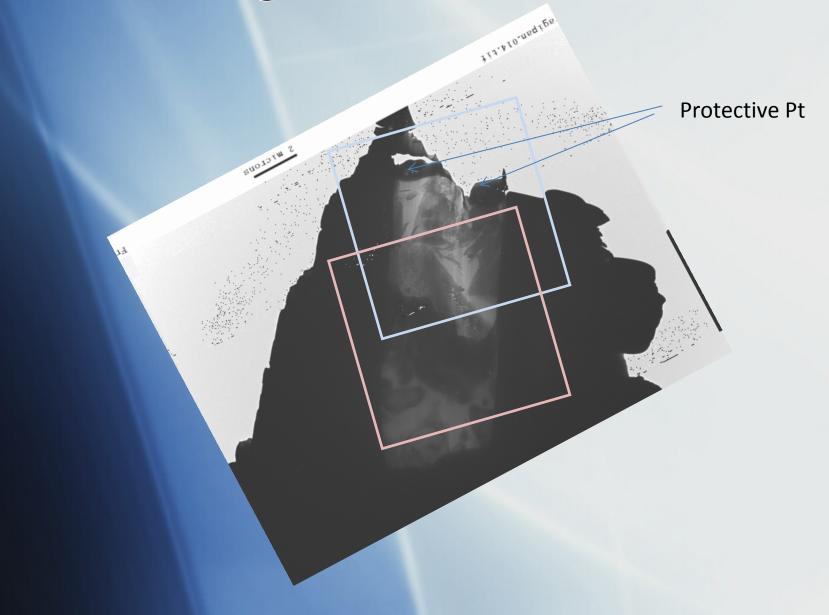
Parent Material	Soil series and degree of fragipan development						
	Well drained	Moderately well drained	Somewhat poorly drained	Poorly drained			
Brown Wisconsinan acid sandstone							
and shale glacial till	Bath	Mardin	Volusia	Chippewa			
_	2	2.5	3	2.5			
	Moderate	Moderate-Strong	Strong	Moderate-Strong			
Pre-Wisconsinan acid sandstone and							
shale glacial till	Allenwood	Watson	Alvira	Shelmadine			
•	0	1.5	2	2			
	None	Moderate-weak	Moderate	Moderate			
Brown Wisconsinan acid sandstone							
and shale colluvium	Laidig	Buchanan	Buchanan	Andover			
	1.5	2	2.5	2			
	Weak-moderate	Moderate	Moderate-Strong	Moderate			
Brown Wisconsinan acid shale							
colluvium	Shelocta	Ernest	Ernest	Brinkerton			
	0	1	2	2			
	None	Weak	Moderate	Moderate			
Brown Wisconsinan limestone, shale,							
and sandstone colluvium	Murrill	Clarksburg	Penlaw	Thorndale			
	0	0.5	1	1			
	None	Very Weak	Weak	Weak			
Brown Wisconsinan loess	Duncannon	Lawrenceville	Chalfont	Doyleston			
	0	1.5	2	2			
	None	Weak-moderate	Moderate	Moderate			

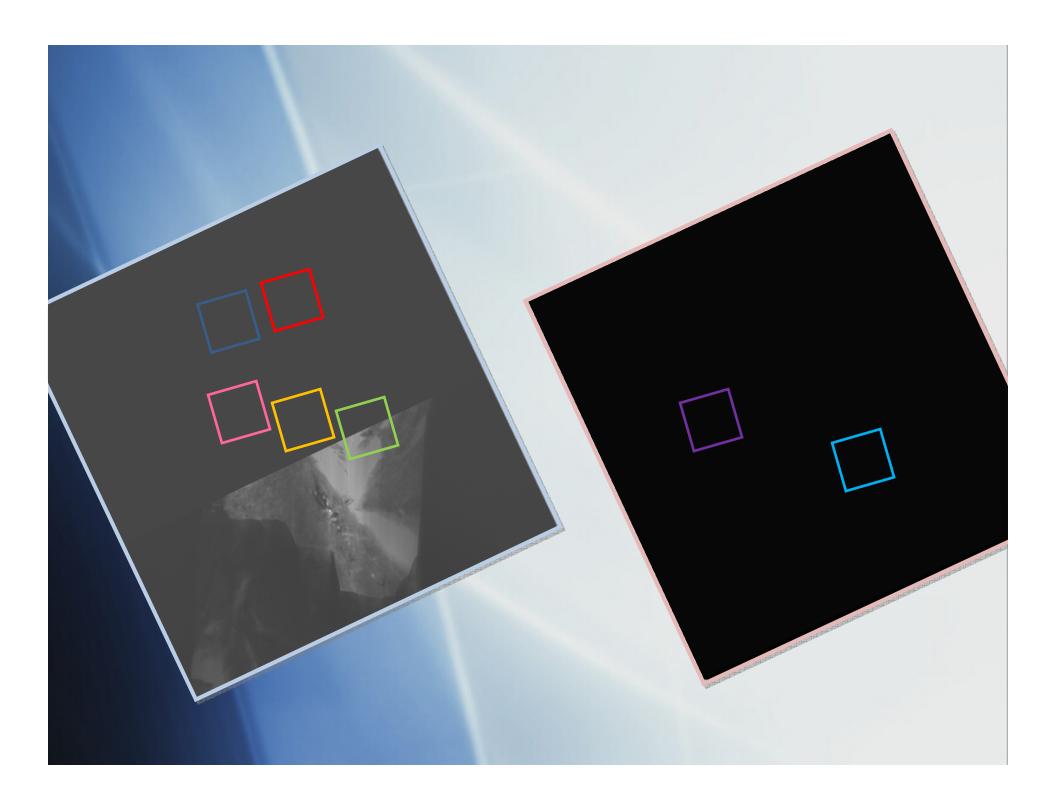
Parent Material	Soil taxa and degree of fragipan development						
	Well drained	Moderately well drained	Somewhat poorly drained	Poorly drained			
Brown Wisconsinan acid sandstone							
and shale glacial till	TYPIC FRAGIUDEPTS	TYPIC FRAGIUDEPTS	AERIC FRAGIAQUEPTS	TYPIC FRAGIAQUEPTS			
	2	2.5	3	2.5			
	Moderate	Moderate-Strong	Strong	Moderate-Strong			
Pre-Wisconsinan acid sandstone and							
shale glacial till	TYPIC HAPLUDULTS	TYPIC FRAGIUDULTS	AERIC FRAGIAQUULTS	TYPIC FRAGIAQUULTS			
chare gracial in	0	1.5	2	2			
	None	Moderate-weak	Moderate	Moderate			
Durana Wilana and and a sandatana							
Brown Wisconsinan acid sandstone and shale colluvium	TYPIC FRAGIUDULTS	AQUIC FRAGIUDULTS	AQUIC FRAGIUDULTS	TYPIC FRAGIAQUULTS			
and Shale Condition	1.5	2	2.5	2			
	Weak-moderate	Moderate	Moderate-Strong	Moderate			
Duran Wissensinen seid skale							
Brown Wisconsinan acid shale colluvium	TYPIC HAPLUDULTS	AQUIC FRAGIUDULTS	AQUIC FRAGIUDULTS	TYPIC FRAGIAQUALFS			
Collaviani	0	1	2	2			
	None	Weak	Moderate	Moderate			
Brown Wisconsinan limestone, shale, and sandstone colluvium	TYPIC HAPLUDULTS	OXYAQUIC FRAGIUDALFS	AQUIC FRAGIUDALFS	TYPIC FRAGIAQUALFS			
and Sandstone Condition	O O O O O O O O O O O O O O O O O O O	0.5	AQUIC FRAGIODALFS	1 TPIC FRAGIAQUALES			
	None	Very Weak	Weak	Weak			
D 140		0)/// 01 0 FD 0 1 1 1	4 OLUG ED 4 OU ID 4 : 50	T)/DIO ED A OLA OLI : : : = 0			
Brown Wisconsinan loess	ULTIC HAPLUDALFS	OXYAQUIC FRAGIUDALFS	AQUIC FRAGIUDALFS	TYPIC FRAGIAQUALFS			
	0 None	1.5 Weak-moderate	2 Moderate	2 Moderate			
1 = weak, 2 = moderate, 3 = strong	INOHE	weak-inouclate	iviouerate	iviouerate			
moderate, e chong							



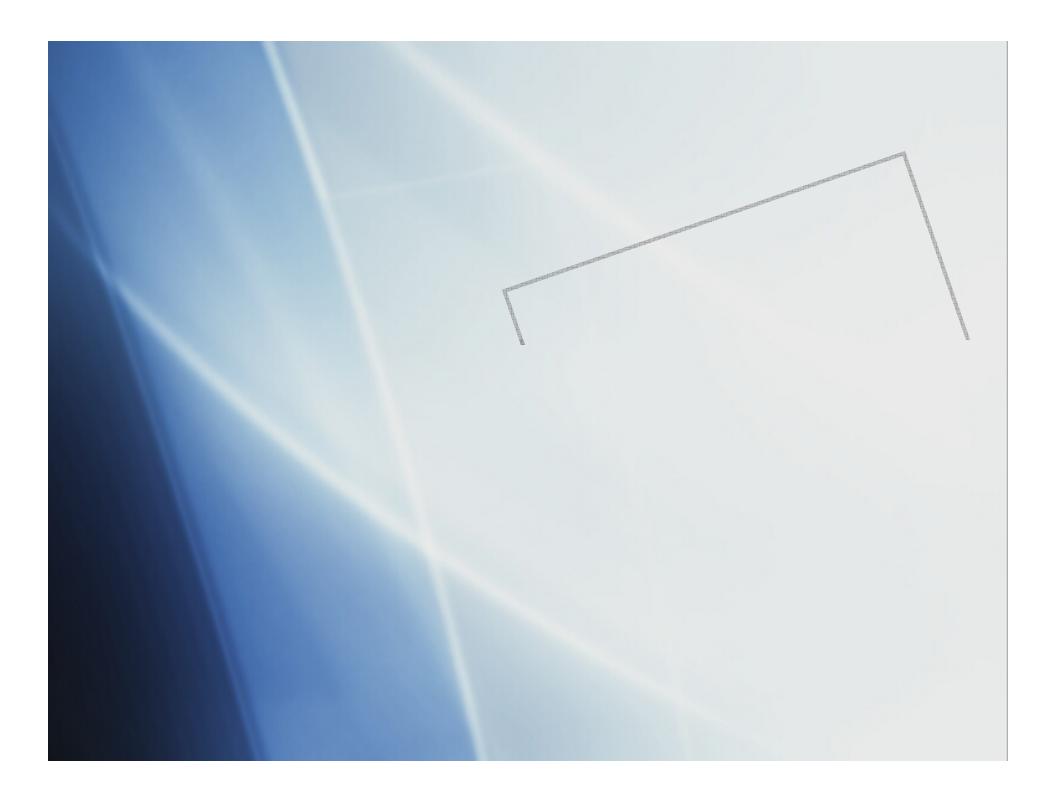


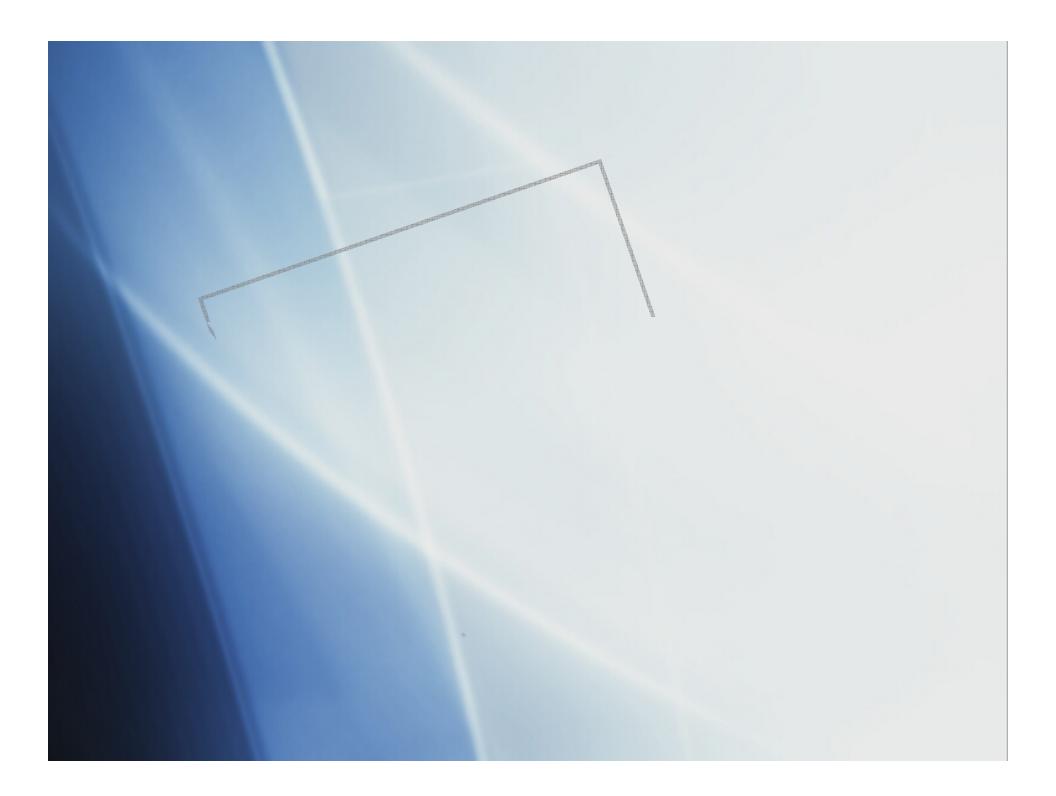
Bright Field TEM

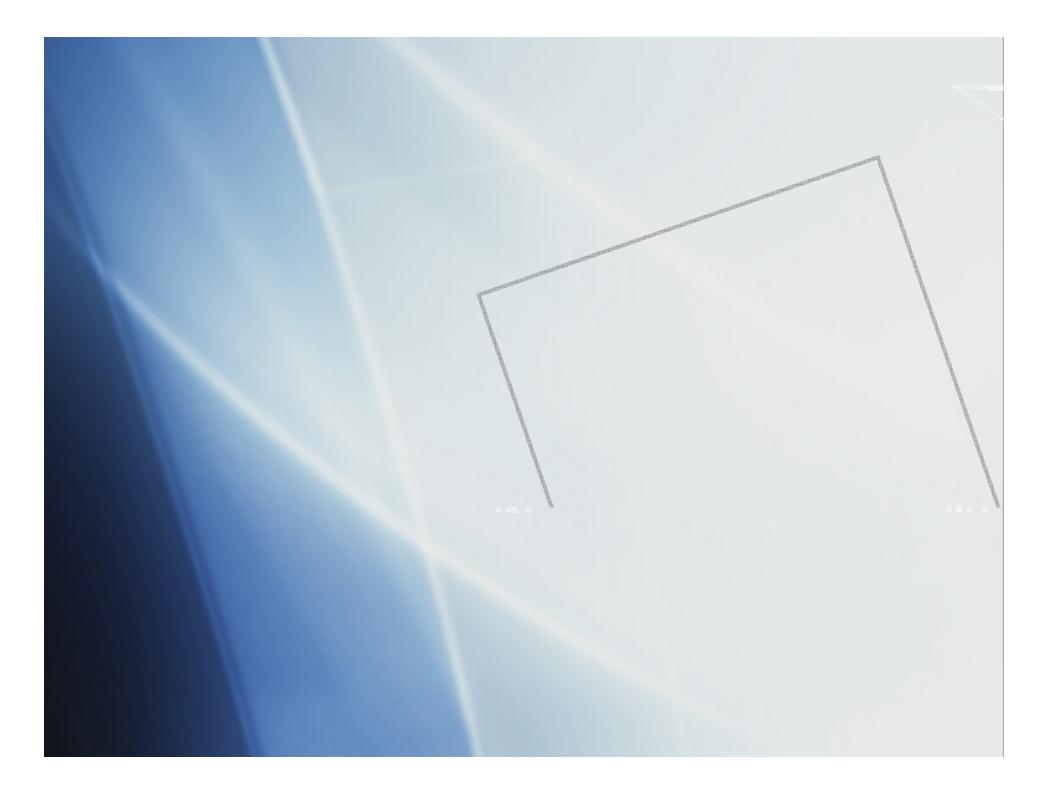








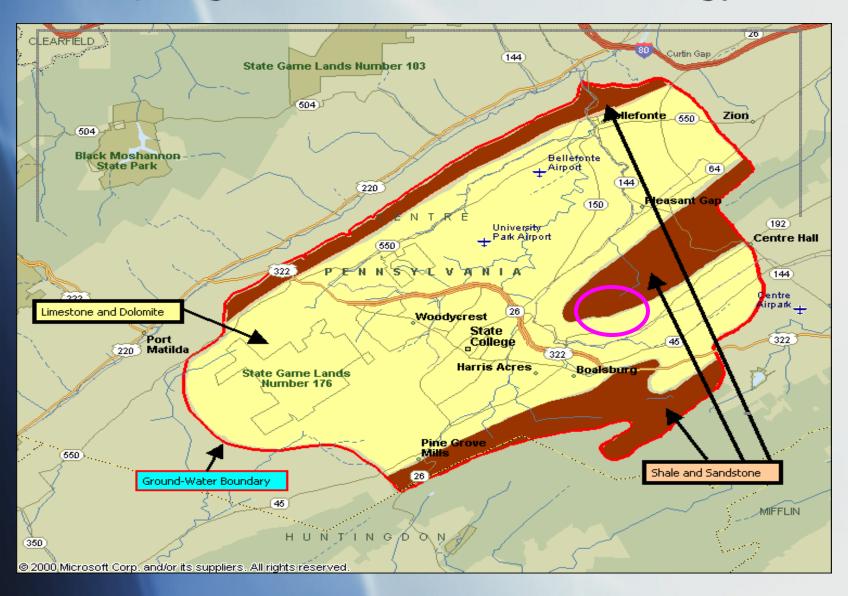


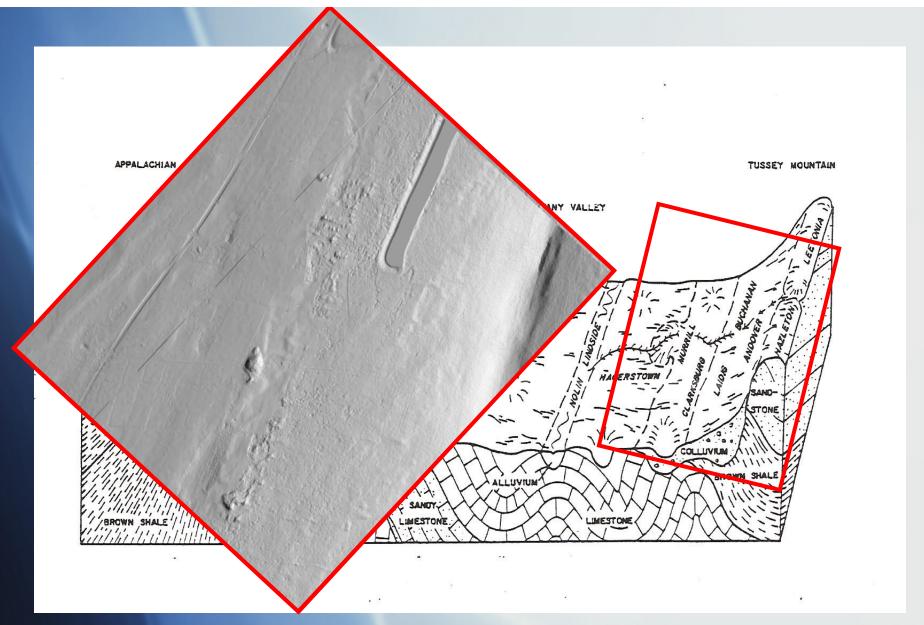


Study 3

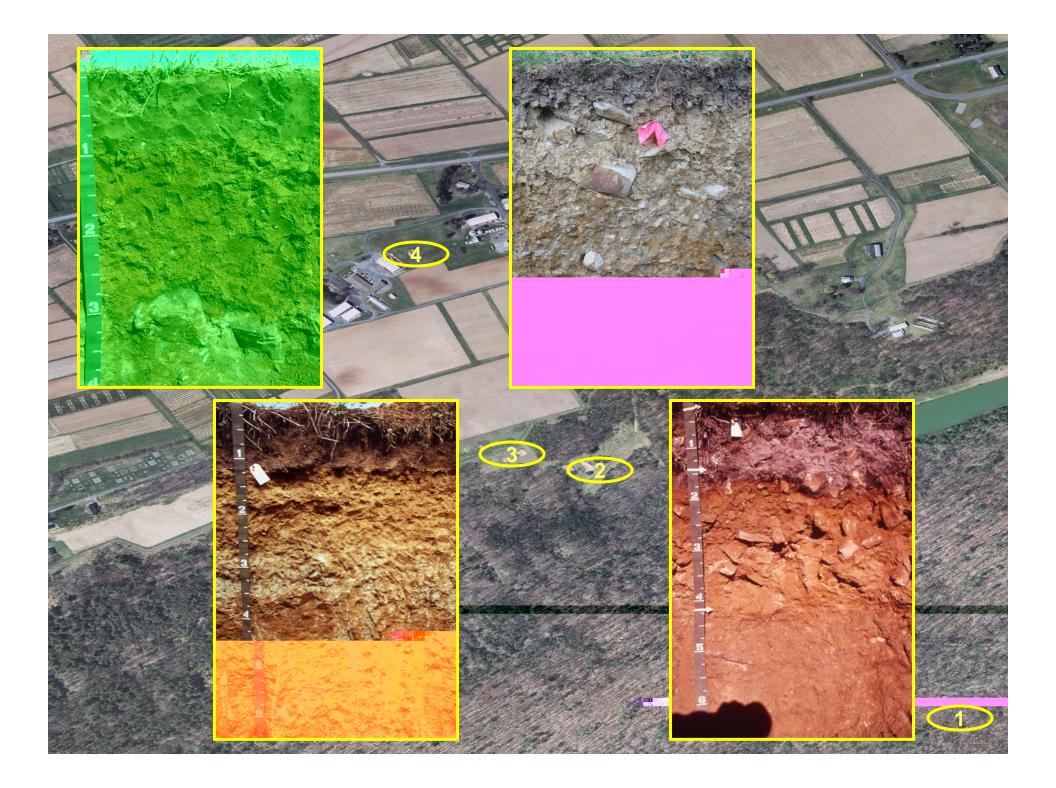
 Hypothesis: Uniformity of Bx PSD due to loess (or differential parent material weathering)

Spring Creek Watershed Geology

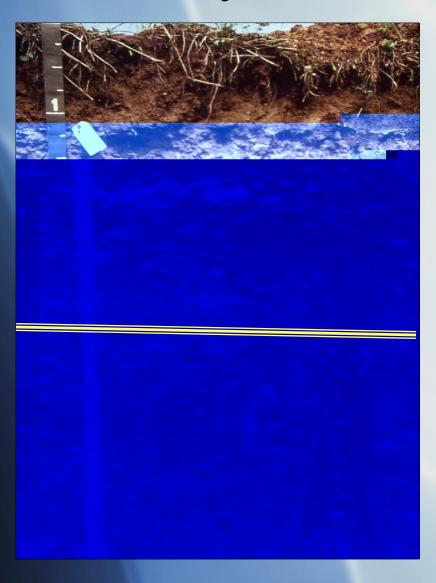


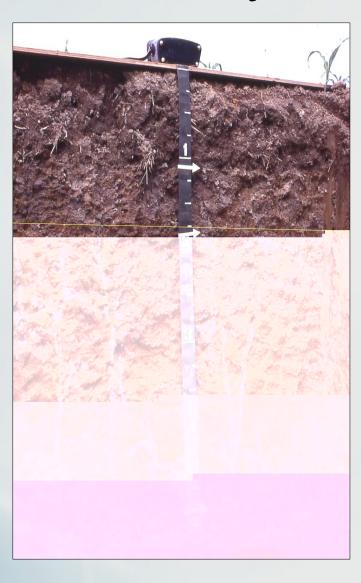


Soil-Landscape Relations of Nittany Valley
Southwest of State College

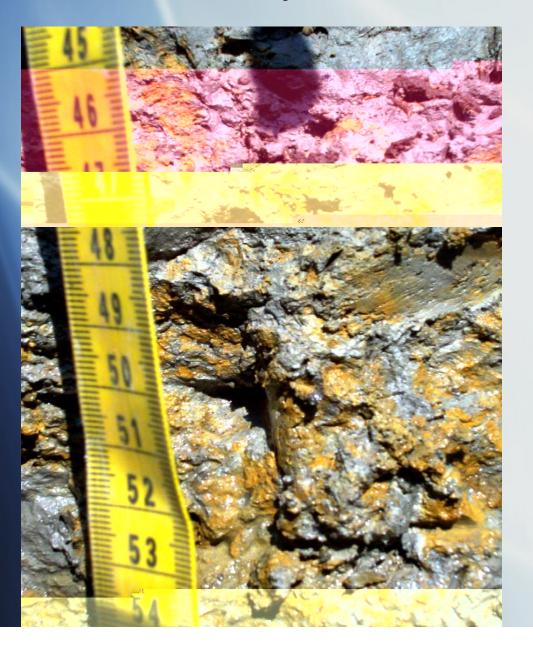


Study 4: Hurricane Study

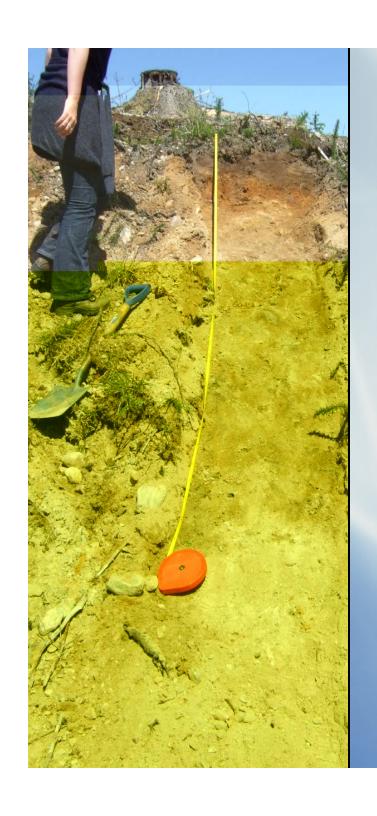




Study 5: DOC Study







Study 6: Periglacial Study

Fragipan under Spodosol near Strathpeffer Scotland; till PM.

Near Fitpatrick's type site for his periglacial Bx predisposition

Ciolkosz grade 1

Bd in the northeast?

2.2 m profile